Claims

1. An apparatus for simultaneously monitoring an array of reaction sites for light indicating that a reaction is taking place at a particular site, comprising:

means for receiving a plurality of liquid samples at respective reation sites;

means for dispensing at least one reagent into said samples;

an optically sensitive device arranged so that in use the light generated by the reaction of a particular liquid sample will impinge upon a particular predetermined region of said optically sensitive device;

means for determining the level of light impinging upon each of said predetermined regions; and

means to record the variation of said light level with time for each of said liquid samples.

2. An apparatus as claimed in claim 1, wherein said means for receiving a plurality of liquid samples comprises a plate.

3. An apparatus for identifying target bases in DNA sequences comprising:

a plate for receiving a plurality of liquid samples at respective reaction sites;

means for dispensing at least one reagent into said samples;

an optically sensitive device arranged so that in use light generated by the reaction of a particular liquid sample signifying the incorporation of a nucleotide will impinge upon a particular region of said optically sensitive device;

means for determining the level of light impinging upon each of said said predetermined regions; and

means for recording the variation of said light level with time.

4. An apparatus as claimed in claim 1, 2 or 3, wherein the optically sensitive device comprises a single optical transducer.

5. An apparatus as claimed in claim 1, 2, 3 or 4, arranged to monitor the reaction sites from underneath.

6. An apparatus as claimed in any of claims 1 to 5, comprising an array of lenses between, or arranged in use between, said reaction sites and the optically sensitive device.

7. An apparatus as claimed in claim 6, wherein the lenses of said array are spaced by a smaller amount than the spacing of the corresponding reaction sites.

8. An apparatus as claimed in any preceding claim, wherein the optically sensitive device comprises a charge-coupled device.

9. An apparatus as claimed in claim 8, wherein the optically sensitive device comprises a frame transfer charge-coupled device.

10. An apparatus as claimed in any preceding claim, comprising means to record a measure of the total light output from a given reaction site.

11. An apparatus as claimed in any preceding claim, comprising means to convert the electrical output from said optically sensitive device into a digital signal.

12. An apparatus as claimed in claim 11, wherein said conversion means converts the signals from a plurality of neighbouring pixels in a single block.

13. An apparatus as claimed in any of claims 2 to 12,

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wherein said plate is in contact with heat regulating means.

14. An apparatus as claimed in any of claims 2 to 13, wherein masking means are provided between reaction sites on the plate.

15. An apparatus as claimed in claim 14, wherein said masking means are provided by channels in a block.

16. An apparatus as claimed in claim 15, wherein said block comprises temperature regulating means.

17. An apparatus as claimed in claim 15 or 16, wherein said channels flare outwardly towards the lower part thereof.

18. A method of identifying a target base in a DNA sequence, comprising detecting the light level emitted from a plurality of reaction sites on respective portions of an optically sensitive device, converting the light impinging upon each of said portions of said optically sensitive device into an electrical signal which is distinguishable from the signals from all of said other regions, determining a light intensity for each of said discrete regions from the corresponding electrical signal, and recording the variations of said electrical signals with time.

19. A method as claimed in claim 18, comprising monitoring a plurality of reaction sites simultaneously.

20. A method as claimed in claim 18 or 19, wherein the interval between successive readings of the state of the optically sensitive device is less than or equal to the time between the addition of reagents to consecutive reaction sites.

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which is distinguishable from the signals from all of said other regions, determining a light intensity for each of said discrete regions from the corresponding electrical signal, and recording the variations of said electrical signals with time.

20. A method as claimed in claim 19, comprising monitoring a plurality of reaction sites simultaneously.

21. A method as claimed in claim 19 or 20, wherein the interval between successive readings of the state of the optically sensitive device is less than or equal to the time between the addition of reagents to consecutive reaction sites.

22. A method as claimed in any of claims 18 to 21 comprising recording the times at which a series of peaks in light output occur for each sample and, thereby enabling each peak to be associated with the addition of a particular reagent to the corresponding sample.

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